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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LOVEL, KIMBERLY M	

ART UNIT	PAPER NUMBER
2167	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/754,010	DAY ET AL.	
	Examiner	Art Unit	
	Kimberly Lovel	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8,10-16 and 18-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1, 3-8, 10-16 and 18-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 3-8, 10-16 and 18-21 are rejected. Claims 2, 9 and 17 are canceled.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9 March 2007 has been entered.

Claim Rejections - 35 USC § 101

3. The rejections under 35 U.S.C. 101 of **claims 1, 3, 4, 7, 8, 10 and 12** because the claimed invention is directed to non-statutory subject matter are withdrawn as necessitated by amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3-8, 9-16 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article "Efficient Mid-Query Re-Optimization of Sub-Optimal Query Execution Plans" by Kabra et al (hereafter Kabra) in view of US PGPub 2005/0097078 to Lohman et al (hereafter Lohman).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing

that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Referring to claim 1, Kabra et al disclose a method for automatic handling of errors within a database engine (see abstract, lines 6-8 – the sub-optimality is considered to represent the *error*), including the further limitations of:

detecting an error while executing a query access plan, and wherein the query access plan is of the type generated by a query optimizer (see page 109, column 2, lines 34-37 and page 110, column 1, 10-15 – the error is found during execution of the execution plan; the execution plan is considered to represent the *query access plan*);

in response to detecting the error (see page 109, column 2, line 34 – page 110, column 1, line 4 – after the error is determined the query plan is rebuilt since the remainder of the query plan is based on the estimate), automatically rebuilding the query access plan with query optimizer to generate a new query access plan (see page 110, column 1, lines 2-4 and lines 13-15 – upon the determination that the plan is sub-optimal, the query optimizer is re-invoked to generate a new execution plan); and

executing the new query access plan to generate at least a portion of a result set for storage or display (see page 110, column 1, line 15 – the fresh new execution plan for the query is executed). However, Kabra fails to explicitly disclose the further limitation wherein the error is an execution error of a type that halts execution of the query access plan. Lohman discloses execution of a query plan (see abstract), including the further limitations of detecting an error while executing the plan, wherein the error is an execution error of a type that halts execution of the query access plan

(see [0049], lines 14-18) and in response to detecting the error, automatically rebuilding the query access plan to generate a new query access plan [re-optimization] (see [0049], lines 14-22 and Fig 3) in order to increase the efficiency and accuracy of the execution of query plans.

It would have been obvious to one of ordinary skill in the art to use Lohman's steps for automatically rebuilding a plan after an error has been detected that causes execution to fail with method for query re-optimization as disclosed by Kabra which detects errors due to optimization. One would have been motivated to do so in order to increase the efficiency and accuracy of the execution of query plans with fatal errors.

Referring to claim 3, the combination of Kabra and Lohman (hereafter Kabra/Lohman) discloses the method of claim 1, wherein the error is a function check [error in the join] (Kabra: see page 109, column 2, lines 29-33; Lohman: see [0049]).

Referring to claim 4, Kabra/Lohman discloses the method of claim 1 further comprising the steps of:

receiving another error while executing a function within the new query access plan; identifying a first implementation method of the function within the new query access plan; and rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function so as to generate a rebuilt query access plan (Lohman: see Fig 3 and [0137]).

Referring to claim 5, Kabra/Lohman discloses the method according to claim 1, further comprising the step of: logging information about the error, and the new query access plan (Kabra: see page 9, column 1, lines 16-27).

Referring to claim 6, Kabra/Lohman discloses the method according to claim 1, further comprising the step of: reporting the error (Kabra: see page 109, column 1, lines 16-27).

Referring to claim 7, Kabra et al disclose a method for automatic handling of errors within a database engine (see abstract, lines 6-8 – the sub-optimality is considered to represent the *error*), including the further limitations of:

receiving an error while executing a function within a query access plan and wherein the query access plan is of the type generated by a query optimizer (see page 109, column 2, lines 34-37 and page 110, column 1, 10-15 – the error is found during execution of the execution plan; the execution plan is considered to represent the *query access plan*);

rebuilding the query access plan with the query optimizer (see page 110, column 1, lines 2-4 and lines 13-15 – upon the determination that the plan is sub-optimal, the query optimizer is re-invoked to generate a new execution plan); and

executing the new query access plan to generate at least a portion of a result set for storage or display (see page 110, column 1, line 15 – the fresh new execution plan for the query is executed). However, Kabra fails to explicitly disclose the further limitation wherein the error is an execution error of a type that halts execution of the query access plan; and identifying a first implementation method of the function within the new query access plan; and rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function so as to generate a rebuilt query access plan. Lohman discloses execution of a query plan

(see abstract), including the further limitations of detecting an error while executing the plan, wherein the error is an execution error of a type that halts execution of the query access plan (see [0049], lines 14-18); identifying a first implementation method of the function within the new query access plan (see Fig 3 and [0137]); and rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function so as to generate a rebuilt query access plan (see [0049], lines 14-22 and Fig 3).

It would have been obvious to one of ordinary skill in the art to use Lohman's steps for rebuilding a plan after an error has been detected that causes execution to fail with method for query re-optimization as disclosed by Kabra, which detects errors due to optimization. One would have been motivated to do so in order to increase the efficiency and accuracy of the execution of query plans with fatal errors.

Referring to claim 8, Kabra/Lohman discloses the method of claim 7, wherein the function is one of a join function [error in the join], an indexing function, a grouping function, and an ordering function (Kabra: see page 109, column 2, lines 29-33).

Referring to claim 10, Kabra/Lohman discloses the method of claim 7, further comprising the steps of:

receiving another error while executing the function within the new query access plan; and rebuilding the new query access plan by replacing the second implementation method with a third implementation method of the function (Lohman: see Fig 3 and [0137]).

Referring to claim 11, Kabra/Lohman discloses the method according to claim 10 further comprising the step of: logging information about the error, the another error, and the new query access plan (Kabra: see page 109, column 1, lines 16-27).

Referring to claim 12, Kabra et al disclose a method for automatic handling of errors within a database engine (see abstract, lines 6-8 – the sub-optimality is considered to represent the *error*), including the further limitations of:

executing a query access plan comprising a plurality of functions, each function including a first implementation method, and the query access plan of the type generated by a query optimizer (see page 109, column 2, lines 34-37 and page 110, column 1, 10-15);

detecting a first error when executing a first function (see page 109, column 2, lines 34-37 and page 110, column 1, 10-15 – the error is found during execution of the execution plan; the execution plan is considered to represent the *query access plan*);

rebuilding the query access plan to generate a new query access plan with the query optimizer (see page 110, column 1, lines 2-4 and lines 13-15 – upon the determination that the plan is sub-optimal, the query optimizer is re-invoked to generate a new execution plan); and

executing the new query access plan to generate at least a portion of a result set for storage or display (see page 110, column 1, line 15 – the fresh new execution plan for the query is executed). However, Kabra fails to explicitly disclose the further limitations wherein the error is an execution error of a type that halts execution of the query access plan; receiving a second error while executing the first function within the

new query access plan; rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function. Lohman discloses execution of a query plan (see abstract), including the further limitations of detecting an error while executing the plan, wherein the error is an execution error of a type that halts execution of the query access plan (see [0049], lines 14-18); receiving a second error while executing the first function within the new query access plan (see Fig 3 and [0137]); rebuilding the new query access plan by replacing the first implementation method with a second implementation method of the function (see [0049], lines 14-22 and Fig 3) in order to increase the efficiency and accuracy of the execution of query plans.

It would have been obvious to one of ordinary skill in the art to use Lohman's steps for rebuilding a plan after an error has been detected that causes execution to fail with method for query re-optimization as disclosed by Kabra which detects errors due to optimization. One would have been motivated to do so in order to increase the efficiency and accuracy of the execution of query plans with fatal errors.

Referring to claim 13, the program product is rejected on the same grounds as the method of claim 1.

Referring to claim 14, Kabra/Lohman discloses the program product of claim 13, wherein the program code is further configured to:

receive an error while executing a function within the new query access plan; identify a first implementation method of the function within the new query access plan); and rebuild [re-optimize] the new query access plan by replacing the first

implementation method with a second implementation method of the function so as to generate a rebuilt query access plan (Lohman: see Fig 3 and [0137]).

Referring to claim 15, the program product is rejected on the same grounds as the method of claim 7.

Referring to claim 16, the apparatus is rejected on the same grounds as the method of claim 1.

Referring to claim 18, Kabra/Lohman discloses apparatus of claim 16, wherein the error is a function check [error in the join] (Kabra: see page 109, column 2, lines 29-33; Lohman: see [0049]).

Referring to claim 19, Kabra/Lohman discloses the apparatus of claim 16, wherein the program code is further configured to:

detect another error while executing a function within the new query access plan; identify a first implementation method of the function within the new query access plan; and rebuild [re-optimize] the new query access plan by replacing the first implementation method with a second implementation method of the function so as to generate a rebuilt query access plan (Lohman: see Fig 3 and [0137]).

Referring to claim 20, Kabra/Lohman discloses apparatus according to claim 16, wherein the program code is further configured to: log information about the error, and the new query access plan (Kabra: see page 109, column 1, lines 16-27).

Referring to claim 21, Kabra/Lohman discloses the apparatus according to claim 16, wherein the program code is further configured to: report the error (Kabra: see page 109, column 1, lines 16-27).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly Lovel whose telephone number is (571) 272-2750. The examiner can normally be reached on 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kimberly Lovel
Examiner
Art Unit 2167

22 May 2007
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